

**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

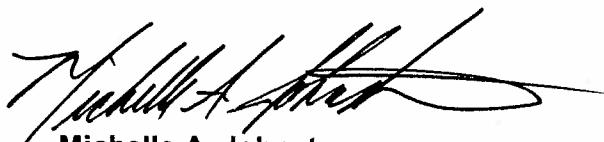
**ANALYTICAL REPORT**

**Perfluorocarbon (PFC) Analysis**

**Lot #: D9J270265**

**Dena Haverland**

**Dalton Utilities  
1200 V.D. Parrot Jr. Parkway  
Dalton, GA 30721**



**Michelle A. Johnston**  
**Project Manager**

**January 20, 2010  
Revision 1 January 22, 2010**

## **Case Narrative**

**D9J270265**

TestAmerica Denver utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the methods summary page in accordance with the methods indicated. Dilution factors and footnotes are provided on each datasheet to assist in the interpretation of the results.

The results relate only to the samples in this report and meet all requirements of NELAC. All data have been reviewed for compliance with the laboratory QA/QC plan and have found to be compliant with laboratory protocols with any exceptions noted below.

Please note that Non-Detect (ND) results have been evaluated down to the Method Detection Limit (MDL) and should be considered ND at the MDL. Unless otherwise noted, results for solids have been dry weight corrected.

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### **Sample Arrival and Receipt**

The following report contains the analytical results for three soil samples received at TestAmerica Denver on October 27, 2009, according to documented sample acceptance procedures. The samples were received in good condition at a temperature of 3.1°C.

The laboratory received two soil jars for all three soil samples. On October 28, 2009, the client instructed the laboratory to analyze both jars for each sample as separate samples. A revised chain-of-custody was received on October 28, 2009. Both chains-of-custody have been included.

Please note the seven water samples listed on the chain-of-custody were received at the laboratory on October 23, 2009, and are reported under a separate cover (D9J230362). The original soil samples received on October 23, 2009, were cancelled in accordance with the client's instructions and re-sampled on October 26, 2009.

No other anomalies were encountered during sample receipt.

### **Standards**

Analytical standards were prepared using commercially available certified solutions containing all compounds of interest.

The mass labeled compounds 13C4 PFBA, 13C2 PFHxA, 18O2 PFHxS, 13C4 PFOA, 13C4 PFOS, 13C5 PFNA, 13C2 PFDA, 13C2 PFUnA, 13C2 PFDoA, and D3 MeFOSA were introduced at the extraction step and were used for internal standards for the quantitation of the target compounds.

### **Sample Extraction and Analysis**

The samples presented in this report were extracted for the target analytes by TestAmerica Denver's Standard Operating Procedure (SOP) DV-OP-0019 and analyzed for the target analytes by TestAmerica Denver's SOP DV-LC-0012.

### **Method QC Samples**

The Method Blank is processed reagent water spiked with internal standard and prepared with each batch of 20 samples of the same matrix. The method blanks were non-detect at the reporting limits for the target analytes.

Each batch is prepared with low and mid level Laboratory Control Samples (LCS). The LCS recoveries for both levels were within established control limits, with the exception of the items noted in section Analytical Comments.

#### Analytical Comments

The Standard Operating Procedure (SOP) was altered slightly in the sample preparation for PFCs. Samples AB-13, AA-2, and AB-13 required 2-mL of Hydrochloric acid instead of the SOP required 1-mL to bring the pH below 7.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to matrix interference and high concentrations of target analytes, all six samples had to be analyzed at dilutions. The reporting limits have been adjusted relative to the dilutions required.

Due to instrumentation problems, diluted analyses for all six samples in batch 9308329 were analyzed past the laboratory recommended 40 day analysis holding time. Due to low internal standard recoveries & low percent recoveries in the mid-level LCS and a high percent recovery in the low-level LCS associated with batch 9308329, all six samples were re-extracted out of the laboratory prescribed hold time and reanalyzed in batch 9357164. Both batches have been included in this report. There is no prescribed regulatory holding time requirement for PFCs. The scientific literature indicates PFCs are highly persistent compounds in the environment. TestAmerica Denver has conducted stability studies indicating medium- and low-level standard solutions of PFOA are stable for at least three months in glass, polystyrene, and polypropylene plastics at  $4\pm 2$  °C. The 7-day/40-day and 14-day/40-day holding times listed above are based on the general EPA convention for the holding time of extractable organic compounds in water and soil. Please note the sample results should be considered estimated.

The mid-level LCS/LCSD and low-level LCS associated with QC batch 9308329 exhibited percent recoveries and internal standard recoveries outside the QC control limits for several compounds. Upon re-extraction and reanalysis in QC batch 9357164, percent recovery outliers were still present for Perfluorooctanoic acid (PFOA) and Perfluorononanoic acid (PFNA). Both sets of data have been provided, as re-extraction was unavoidably performed outside the laboratory recommended sample holding time.

The MS/MSD performed on sample AB-13 associated with QC batch 9308329 exhibited spike compound recoveries outside the QC control limits for Perfluorooctanesulfonate (PFOS) and Perfluorooctanoic acid (PFOA). The acceptable low-level and mid-level LCS analyses data indicated the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Spike compound recoveries and RPD data could not be calculated for the MS/MSD performed on sample AB-136 associated with QC batch 9308329, because the sample was diluted beyond the ability to quantitate recoveries. The acceptable mid-level and low-level LCS analyses data indicated the analytical system was operating within control.

Spike compound recoveries and RPD data could not be calculated for the laboratory generated MS/MSD associated with QC batch 9357164, because the sample was diluted beyond the ability to quantitate recoveries. The acceptable mid-level and low-level LCSs analyses data indicated the analytical system was operating within control.

The Standard Operating Procedure (SOP) was altered slightly for these samples in the sample prep and LC conditions. The alterations are listed below.

Solvents are now the same as they were in the original SOP and run per the following gradient: From 0 to 11 minutes, the flow rate is 0.4 mL/minute and the MeOH ramps up from 25% to 100%. From 11 to 11.01 minutes, the flow rate increases to 0.7 mL/minute and this flow is diverted from the MS. At 13 minutes the flow rate decreases back down to 0.4 mL/minute and 25% MeOH. The column then equilibrates to 14 minutes.

PFTriA and PFTeA now use <sup>13</sup>C2 PFUnA as their internal standard instead of <sup>13</sup>C2 PFDoA.

No other anomalies were observed.

**Revision**

The original report was revised to include the MS/MSD performed on sample AB-13 associated with batch 9308329. Due to a laboratory error, the diluted MS/MSD performed on sample AB-13 was not reported in the original report. The case narrative was revised to include the anomaly about the MS/MSD being diluted out for batch 9308329. The case narrative was also revised to include the anomaly for all six samples in batch 9308329 being analyzed past the laboratory recommended holding time. Please accept our apology for any inconvenience these errors may have caused.

## EXECUTIVE SUMMARY - Detection Highlights

D9J270265

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
<b>AB-13 10/26/09 13:43 001</b>				
Perfluorooctanesulfonate	89	79	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid	1100	200	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	220	79	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	140	79	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	330	79	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	140	79	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	210	79	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	1100	79	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	960	200	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	190 J	200	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT)	170 J	200	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB)	1500	79	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F 49 J)	200	ug/kg	DEN -LC-0012	
Perfluorooctanesulfonate	97	79	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid	590	200	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	190	79	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	91	79	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	280	79	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	110	79	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	150	79	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	690	79	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	710	200	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	160 J	200	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT)	150 J	200	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB)	1200	79	ug/kg	DEN -LC-0012
Percent Moisture	75	0.10	%	ASTM D 2216-90
<b>AB-5 10/26/09 14:05 002</b>				
Perfluorooctanesulfonate	220	42	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid	1100	100	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	64	42	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	91	42	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	150	42	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	120	42	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	260	42	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	1300	42	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	650	100	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	210	100	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT)	160	100	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB)	500	42	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F 270)	100	ug/kg	DEN -LC-0012	
Perfluorooctanesulfonate	180	42	ug/kg	DEN -LC-0012

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## EXECUTIVE SUMMARY - Detection Highlights

D9J270265

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
<b>AB-5 10/26/09 14:05 002</b>				
Perfluorooctanoic Acid	990	100	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	59	42	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	87	42	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	150	42	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	150	42	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	260	42	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	1200	42	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	710	100	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	270	100	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT)	140	100	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB)	490	42	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F)	190	100	ug/kg	DEN -LC-0012
Percent Moisture	52	0.10	%	ASTM D 2216-90
<b>AA-2 10/26/09 14:21 003</b>				
Perfluorooctanesulfonate	190	99	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid	2400	250	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	200	99	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	250	99	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	350	99	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	310	99	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	570	99	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	2400	99	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	1200	250	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	550	250	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT)	310	250	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB)	1300	99	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F)	110	250	ug/kg	DEN -LC-0012
Perfluorooctanesulfonate	170	49	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid	1800	120	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	190	49	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	270	49	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	370	49	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	310	49	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	530	49	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	2400	49	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	990	120	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	520	120	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT)	230	120	ug/kg	DEN -LC-0012
Perfluorotetradecanoic acid (P)	46	120	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB)	1200	49	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F)	140	120	ug/kg	DEN -LC-0012

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## EXECUTIVE SUMMARY - Detection Highlights

D9J270265

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
<b>AA-2 10/26/09 14:21 003</b>				
Percent Moisture	59	0.10	%	ASTM D 2216-90
<b>AB-13 10/26/09 13:43 004</b>				
Perfluorooctanesulfonate	81	64	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid	350	160	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	110	64	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	67	64	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	180	64	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	46 J	64	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	90	64	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	440	64	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	470	160	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	140 J	160	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT)	260	160	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB)	620	64	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F)	56 J	160	ug/kg	DEN -LC-0012
Perfluorooctanesulfonate	53 J	64	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid	310	160	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	110	64	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	50 J	64	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	210	64	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	46 J	64	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	82	64	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	360	64	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	360	160	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	100 J	160	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT)	87 J	160	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB)	710	64	ug/kg	DEN -LC-0012
Percent Moisture	69	0.10	%	ASTM D 2216-90
<b>AB-5 10/26/09 14:05 005</b>				
Perfluorooctanesulfonate	370	45	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid	1400	110	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA)	69	45	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA)	110	45	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA)	160	45	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA)	170	45	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA)	290	45	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA)	1500	45	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn)	840	110	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo)	290	110	ug/kg	DEN -LC-0012

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## EXECUTIVE SUMMARY - Detection Highlights

D9J270265

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
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**AB-5 10/26/09 14:05 005**

Perfluorotridecanoic acid (PFT 220	110	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB 510	45	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F 500	110	ug/kg	DEN -LC-0012
Perfluorooctanesulfonate 260	45	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid 1000	110	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA) 56	45	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA) 82	45	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA) 140	45	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA) 150	45	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA) 270	45	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA) 1200	45	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn 630	110	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo 200	110	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT 73 J	110	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB 550	45	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F 340	110	ug/kg	DEN -LC-0012
Percent Moisture 55	0.10	%	ASTM D 2216-90

**AA-2 10/26/09 14:21 006**

Perfluorooctanesulfonate 250	94	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid 2700	240	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA) 200	94	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA) 240	94	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA) 390	94	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA) 390	94	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA) 730	94	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA) 2900	94	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn 1300	240	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo 740	240	ug/kg	DEN -LC-0012
Perfluorotridecanoic acid (PFT 420	240	ug/kg	DEN -LC-0012
Perfluorobutane sulfonate (PFB 1500	94	ug/kg	DEN -LC-0012
Perfluorooctane sulfonamide (F 160 J	240	ug/kg	DEN -LC-0012
Perfluorooctanesulfonate 110	47	ug/kg	DEN -LC-0012
Perfluorooctanoic Acid 1400	120	ug/kg	DEN -LC-0012
Perfluorobutanoic acid (PFBA) 120	47	ug/kg	DEN -LC-0012
Perfluoropentanoic acid (PFPA) 150	47	ug/kg	DEN -LC-0012
Perfluorohexanoic acid (PFHxA) 230	47	ug/kg	DEN -LC-0012
Perfluoroheptanoic acid (PFHpA) 240	47	ug/kg	DEN -LC-0012
Perfluorononanoic acid (PFNA) 360	47	ug/kg	DEN -LC-0012
Perfluorodecanoic acid (PFDA) 1500	47	ug/kg	DEN -LC-0012
Perfluoroundecanoic acid (PFUn 690	120	ug/kg	DEN -LC-0012
Perfluorododecanoic acid (PFDo 420	120	ug/kg	DEN -LC-0012

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## **EXECUTIVE SUMMARY - Detection Highlights**

D9J270265

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
<b>AA-2 10/26/09 14:21 006</b>				
Perfluorotridecanoic acid (PFT 140)	120	ug/kg		DEN -LC-0012
Perfluorobutane sulfonate (PFB 890)	47	ug/kg		DEN -LC-0012
Perfluoroctane sulfonamide (F 85 J)	120	ug/kg		DEN -LC-0012
Percent Moisture	58	0.10	%	ASTM D 2216-90

## METHODS SUMMARY

D9J270265

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Method for Determination of Water Content of Soil	ASTM D 2216-90	ASTM D2216-90

### References:

ASTM Annual Book Of ASTM Standards.

DEN Severn Trent Laboratores, Denver, Facility Standard  
Operating Procedure.

## METHOD / ANALYST SUMMARY

D9J270265

<u>ANALYTICAL METHOD</u>	<u>ANALYST</u>	<u>ANALYST ID</u>
ASTM D 2216-90	Braden H. Peterson	6733
DEN -LC-0012	Andria Lenoble	000800
DEN -LC-0012	Jacqueline Bonnett	003601
DEN -LC-0012	Teresa L. Williams	002510

### References:

ASTM Annual Book Of ASTM Standards.

DEN Severn Trent Laboratores, Denver, Facility Standard  
Operating Procedure.

## SAMPLE SUMMARY

D9J270265

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
LNC71	001	AB-13	10/26/09	13:43
LNC74	002	AB-5	10/26/09	14:05
LNC75	003	AA-2	10/26/09	14:21
LNDVN	004	AB-13	10/26/09	13:43
LNDVW	005	AB-5	10/26/09	14:05
LNDV0	006	AA-2	10/26/09	14:21

**NOTE (S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Dalton Utilities

Client Sample ID: AB-13

HPLC

Lot-Sample #....: D9J270265-001 Work Order #....: LNC711AA Matrix.....: SOLID  
Date Sampled....: 10/26/09 13:43 Date Received...: 10/27/09  
Prep Date.....: 11/04/09 Analysis Date...: 12/05/09  
Prep Batch #....: 9308329 Analysis Time...: 09:45  
Dilution Factor: 10  
\* Moisture.....: 75 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctanesulfonate	89	79	ug/kg	15
Perfluorooctanoic Acid	1100	200	ug/kg	40

SURROGATE	PERCENT	RECOVERY	LIMITS	
			RECOVERY	LIMITS
13C4 PFOA	111	(50 - 200)		
13C4 PFOS	107	(50 - 200)		

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

## Dalton Utilities

Client Sample ID: AB-13

## HPLC

Lot-Sample #....: D9J270265-001 Work Order #....: LNC712AA Matrix.....: SOLID  
 Date Sampled....: 10/26/09 13:43 Date Received...: 10/27/09  
 Prep Date.....: 11/04/09 Analysis Date...: 12/19/09  
 Prep Batch #....: 9308329 Analysis Time...: 19:18  
 Dilution Factor: 10  
 % Moisture.....: 75 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorobutanoic acid (PFBA)	220	79	ug/kg	13
Perfluoropentanoic acid (PFPA)	140	79	ug/kg	35
Perfluorohexanoic acid (PFHxA)	330	79	ug/kg	7.9
Perfluoroheptanoic acid (PFHpA )	140	79	ug/kg	29
Perfluorononanoic acid (PFNA)	210	79	ug/kg	20
Perfluorodecanoic acid (PFDA)	1100	79	ug/kg	30
Perfluoroundecanoic acid (PFUn A)	960	200	ug/kg	72
Perfluorododecanoic acid (PFDo A)	190 J	200	ug/kg	32
Perfluorotridecanoic acid (PFT riA)	170 J	200	ug/kg	45
Perfluorotetradecanoic acid (PFTeA)	ND	200	ug/kg	57
Perfluorobutane sulfonate (PFB S)	1500	79	ug/kg	33
Perfluorohexane sulfonate (PFH xS)	ND	79	ug/kg	31
Perfluorooctane sulfonamide (F OSA)	49 J	200	ug/kg	49

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	101	(50 - 200)
13C4 PFOA	110	(50 - 200)
13C4 PFOS	113	(50 - 200)
13C4 PFBA	123	(50 - 200)
13C2 PFHxA	110	(50 - 200)
18O2 PFHxS	115	(50 - 200)
13C5 PFNA	116	(50 - 200)
13C2 PFDA	118	(50 - 200)
13C2 PFUnA	130	(50 - 200)
13C2 PFDoA	109	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

## Dalton Utilities

Client Sample ID: AB-13

## HPLC

Lot-Sample #....: D9J270265-001 Work Order #....: LNC713AA Matrix.....: SOLID  
 Date Sampled....: 10/26/09 13:43 Date Received...: 10/27/09  
 Prep Date.....: 12/23/09 Analysis Date...: 01/02/10  
 Prep Batch #....: 9357164 Analysis Time...: 23:44  
 Dilution Factor: 10  
 % Moisture.....: 75 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorooctanesulfonate	97	79	ug/kg	15
Perfluorooctanoic Acid	590	200	ug/kg	40
Perfluorobutanoic acid (PFBA)	190	79	ug/kg	13
Perfluoropentanoic acid (PFPA)	91	79	ug/kg	35
Perfluorohexanoic acid (PFHxA)	280	79	ug/kg	7.9
Perfluoroheptanoic acid (PFHpA) )	110	79	ug/kg	29
Perfluorononanoic acid (PFNA)	150	79	ug/kg	20
Perfluorodecanoic acid (PFDA)	690	79	ug/kg	30
Perfluoroundecanoic acid (PFUn A)	710	200	ug/kg	72
Perfluorododecanoic acid (PFDo A)	160 J	200	ug/kg	32
Perfluorotridecanoic acid (PFT ria)	150 J	200	ug/kg	45
Perfluorotetradecanoic acid (P FTeA)	ND	200	ug/kg	57
Perfluorobutane sulfonate (PFB S)	1200	79	ug/kg	33
Perfluorohexane sulfonate (PFH xS)	ND	79	ug/kg	31
Perfluorooctane sulfonamide (F OSA)	ND	200	ug/kg	49

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeOSA	93	(50 - 200)
13C4 PFOA	105	(50 - 200)
13C4 PFOS	95	(50 - 200)
13C4 PFBA	101	(50 - 200)
13C2 PFHxA	104	(50 - 200)
18O2 PFHxS	104	(50 - 200)
13C5 PFNA	101	(50 - 200)
13C2 PFDA	95	(50 - 200)
13C2 PFUnA	93	(50 - 200)
13C2 PFDoA	63	(50 - 200)

**NOTE (S) :**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: AB-5

HPLC

Lot-Sample #....: D9J270265-002 Work Order #....: LNC741AA Matrix.....: SOLID  
Date Sampled....: 10/26/09 14:05 Date Received...: 10/27/09  
Prep Date.....: 11/04/09 Analysis Date...: 12/05/09  
Prep Batch #....: 9308329 Analysis Time...: 10:00  
Dilution Factor: 10  
% Moisture.....: 52 Method.....: DEN -LC-0012

PARAMETER	REPORTING			
	RESULT	LIMIT	UNITS	MDL
Perfluorooctanesulfonate	220	42	ug/kg	7.9
Perfluorooctanoic Acid	1100	100	ug/kg	21
SURROGATE	PERCENT			
	RECOVERY	RECOVERY	LIMITS	
13C4 PFOA	100	(50 - 200)		
13C4 PFOS	103	(50 - 200)		

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

## Dalton Utilities

Client Sample ID: AB-5

## HPLC

Lot-Sample #....: D9J270265-002 Work Order #....: LNC742AA Matrix.....: SOLID  
 Date Sampled....: 10/26/09 14:05 Date Received...: 10/27/09  
 Prep Date.....: 11/04/09 Analysis Date...: 12/19/09  
 Prep Batch #....: 9308329 Analysis Time...: 20:22  
 Dilution Factor: 10  
 % Moisture.....: 52 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorobutanoic acid (PFBA)	64	42	ug/kg	7.1
Perfluoropentanoic acid (PFPA)	91	42	ug/kg	18
Perfluorohexanoic acid (PFHxA)	150	42	ug/kg	4.2
Perfluoroheptanoic acid (PFHpA) )	120	42	ug/kg	15
Perfluorononanoic acid (PFNA)	260	42	ug/kg	10
Perfluorodecanoic acid (PFDA)	1300	42	ug/kg	16
Perfluoroundecanoic acid (PFUnA) A)	650	100	ug/kg	38
Perfluorododecanoic acid (PFDoA) A)	210	100	ug/kg	17
Perfluorotridecanoic acid (PFTriA)	160	100	ug/kg	24
Perfluorotetradecanoic acid (PFTeA)	ND	100	ug/kg	30
Perfluorobutane sulfonate (PFB-S)	500	42	ug/kg	17
Perfluorohexane sulfonate (PFHxS)	ND	42	ug/kg	16
Perfluorooctane sulfonamide (FOSA)	270	100	ug/kg	26

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	77	(50 - 200)
13C4 PFOA	81	(50 - 200)
13C4 PFOS	92	(50 - 200)
13C4 PFBA	96	(50 - 200)
13C2 PFHxA	86	(50 - 200)
18O2 PFHxS	88	(50 - 200)
13C5 PFNA	89	(50 - 200)
13C2 PFDA	85	(50 - 200)
13C2 PFUnA	99	(50 - 200)
13C2 PFDoA	96	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

## Dalton Utilities

Client Sample ID: AB-5

## HPLC

Lot-Sample #....: D9J270265-002 Work Order #....: LNC743AA Matrix.....: SOLID  
 Date Sampled....: 10/26/09 14:05 Date Received...: 10/27/09  
 Prep Date.....: 12/23/09 Analysis Date...: 01/02/10  
 Prep Batch #....: 9357164 Analysis Time...: 23:59  
 Dilution Factor: 10  
 % Moisture.....: 52 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorooctanesulfonate	180	42	ug/kg	7.9
Perfluorooctanoic Acid	990	100	ug/kg	21
Perfluorobutanoic acid (PFBA)	59	42	ug/kg	7.1
Perfluoropentanoic acid (PFPA)	87	42	ug/kg	18
Perfluorohexanoic acid (PFHxA)	150	42	ug/kg	4.2
Perfluoroheptanoic acid (PFHpA)	150	42	ug/kg	15
)				
Perfluorononanoic acid (PFNA)	260	42	ug/kg	10
Perfluorodecanoic acid (PFDA)	1200	42	ug/kg	16
Perfluoroundecanoic acid (PFUnA)	710	100	ug/kg	38
A)				
Perfluorododecanoic acid (PFDoA)	270	100	ug/kg	17
A)				
Perfluorotridecanoic acid (PFTriA)	140	100	ug/kg	24
Perfluorotetradecanoic acid (PFTeA)	ND	100	ug/kg	30
Perfluorobutane sulfonate (PFBs)	490	42	ug/kg	17
Perfluorohexane sulfonate (PFHxs)	ND	42	ug/kg	16
Perfluorooctane sulfonamide (FOSA)	190	100	ug/kg	26

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	96	(50 - 200)
13C4 PFOA	111	(50 - 200)
13C4 PFOS	104	(50 - 200)
13C4 PFBA	104	(50 - 200)
13C2 PFHxA	104	(50 - 200)
18O2 PFHxS	105	(50 - 200)
13C5 PFNA	106	(50 - 200)
13C2 PFDA	106	(50 - 200)
13C2 PFUnA	105	(50 - 200)
13C2 PFDoA	85	(50 - 200)

**NOTE(S) :**

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: AA-2

HPLC

Lot-Sample #....: D9J270265-003 Work Order #....: LNC751AA Matrix.....: SOLID  
Date Sampled...: 10/26/09 14:21 Date Received...: 10/27/09  
Prep Date.....: 11/04/09 Analysis Date...: 12/05/09  
Prep Batch #....: 9308329 Analysis Time...: 12:04  
Dilution Factor: 20  
% Moisture.....: 59 Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorooctanesulfonate	190	99	ug/kg	19
Perfluorooctanoic Acid	2400	250	ug/kg	50

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
13C4 PFOA	106	(50 - 200)
13C4 PFOS	116	(50 - 200)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

## Dalton Utilities

Client Sample ID: AA-2

## HPLC

Lot-Sample #....: D9J270265-003   Work Order #....: LNC752AA   Matrix.....: SOLID  
 Date Sampled....: 10/26/09 14:21   Date Received...: 10/27/09  
 Prep Date.....: 11/04/09   Analysis Date...: 12/19/09  
 Prep Batch #....: 9308329   Analysis Time...: 20:38  
 Dilution Factor: 20  
 \* Moisture.....: 59   Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorobutanoic acid (PFBA)	200	99	ug/kg	17
Perfluoropentanoic acid (PFPA)	250	99	ug/kg	43
Perfluorohexanoic acid (PFHxA)	350	99	ug/kg	9.9
Perfluoroheptanoic acid (PFHpA )	310	99	ug/kg	36
Perfluorononanoic acid (PFNA)	570	99	ug/kg	25
Perfluorodecanoic acid (PFDA)	2400	99	ug/kg	37
Perfluoroundecanoic acid (PFUn A)	1200	250	ug/kg	89
Perfluorododecanoic acid (PFDo A)	550	250	ug/kg	40
Perfluorotridecanoic acid (PFT riA)	310	250	ug/kg	57
Perfluorotetradecanoic acid (P FTeA)	ND	250	ug/kg	71
Perfluorobutane sulfonate (PFB S)	1300	99	ug/kg	41
Perfluorohexane sulfonate (PFH xS)	ND	99	ug/kg	38
Perfluorooctane sulfonamide (F OSA)	110 J	250	ug/kg	61

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
MeFOSA	102	(50 - 200)
13C4 PFOA	105	(50 - 200)
13C4 PFOS	117	(50 - 200)
13C4 PFBA	116	(50 - 200)
13C2 PFHxA	109	(50 - 200)
18O2 PFHxS	108	(50 - 200)
13C5 PFNA	109	(50 - 200)
13C2 PFDA	106	(50 - 200)
13C2 PFUnA	120	(50 - 200)
13C2 PFDoA	117	(50 - 200)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

## Dalton Utilities

Client Sample ID: AA-2

## HPLC

Lot-Sample #....: D9J270265-003    Work Order #....: LNC753AA    Matrix.....: SOLID  
 Date Sampled....: 10/26/09 14:21    Date Received...: 10/27/09  
 Prep Date.....: 12/23/09    Analysis Date...: 01/03/10  
 Prep Batch #....: 9357164    Analysis Time...: 00:14  
 Dilution Factor: 10  
 % Moisture.....: 59    Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorooctanesulfonate	170	49	ug/kg	9.3
Perfluorooctanoic Acid	1800	120	ug/kg	25
Perfluorobutanoic acid (PFBA)	190	49	ug/kg	8.4
Perfluoropentanoic acid (PFPA)	270	49	ug/kg	22
Perfluorohexanoic acid (PFHxA)	370	49	ug/kg	5.0
Perfluoroheptanoic acid (PFHpA)	310	49	ug/kg	18
)				
Perfluorononanoic acid (PFNA)	530	49	ug/kg	12
Perfluorodecanoic acid (PFDA)	2400	49	ug/kg	19
Perfluoroundecanoic acid (PFUnA)	990	120	ug/kg	45
A)				
Perfluorododecanoic acid (PFDoA)	520	120	ug/kg	20
A)				
Perfluorotridecanoic acid (PFTriA)	230	120	ug/kg	28
Perfluorotetradecanoic acid (PFTeA)	46 J	120	ug/kg	36
Perfluorobutane sulfonate (PFBs)	1200	49	ug/kg	21
Perfluorohexane sulfonate (PFHxS)	ND	49	ug/kg	19
Perfluorooctane sulfonamide (PFOSA)	140	120	ug/kg	30

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
		(50 - 200)
MeFOSA	106	(50 - 200)
13C4 PFOA	125	(50 - 200)
13C4 PFOS	120	(50 - 200)
13C4 PFBA	118	(50 - 200)
13C2 PFHxA	120	(50 - 200)
18O2 PFHxS	123	(50 - 200)
13C5 PFNA	124	(50 - 200)
13C2 PFDA	122	(50 - 200)
13C2 PFUnA	132	(50 - 200)
13C2 PFDoA	113	(50 - 200)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: AB-13

HPLC

Lot-Sample #....: D9J270265-004 Work Order #....: LNDVN1AC Matrix.....: SOLID  
Date Sampled....: 10/26/09 13:43 Date Received...: 10/27/09  
Prep Date.....: 11/04/09 Analysis Date...: 12/05/09  
Prep Batch #....: 9308329 Analysis Time...: 10:10  
Dilution Factor: 10  
% Moisture.....: 69 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctanesulfonate	81	64	ug/kg	12
Perfluorooctanoic Acid	350	160	ug/kg	32
SURROGATE	PERCENT RECOVERY	RECOVERY		
		LIMITS	(50 - 200)	
13C4 PFOA	103			
13C4 PFOS	108			

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

## Dalton Utilities

Client Sample ID: AB-13

## HPLC

Lot-Sample #....: D9J270265-004    Work Order #....: LNDVN2AC    Matrix.....: SOLID  
 Date Sampled....: 10/26/09 13:43    Date Received...: 10/27/09  
 Prep Date.....: 11/04/09    Analysis Date...: 12/19/09  
 Prep Batch #....: 9308329    Analysis Time...: 20:54  
 Dilution Factor: 10  
 \* Moisture.....: 69    Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorobutanoic acid (PFBA)	110	64	ug/kg	11
Perfluoropentanoic acid (PFPA)	67	64	ug/kg	28
Perfluorohexanoic acid (PFHxA)	180	64	ug/kg	6.4
Perfluoroheptanoic acid (PFHpA )	46 J	64	ug/kg	23
Perfluorononanoic acid (PFNA)	90	64	ug/kg	16
Perfluorodecanoic acid (PFDA)	440	64	ug/kg	24
Perfluoroundecanoic acid (PFUn A)	470	160	ug/kg	58
Perfluorododecanoic acid (PFDo A)	140 J	160	ug/kg	26
Perfluorotridecanoic acid (PFT riA)	260	160	ug/kg	37
Perfluorotetradecanoic acid (P FTeA)	ND	160	ug/kg	46
Perfluorobutane sulfonate (PFB S)	620	64	ug/kg	27
Perfluorohexane sulfonate (PFH xS)	ND	64	ug/kg	25
Perfluorooctane sulfonamide (F OSA)	56 J	160	ug/kg	39

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
MeFOSA	88	(50 - 200)
13C4 PFOA	122	(50 - 200)
13C4 PFOS	122	(50 - 200)
13C4 PFBA	133	(50 - 200)
13C2 PFHxA	114	(50 - 200)
18O2 PFHxS	121	(50 - 200)
13C5 PFNA	126	(50 - 200)
13C2 PFDA	131	(50 - 200)
13C2 PFUnA	147	(50 - 200)
13C2 PFDoA	143	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

## Dalton Utilities

Client Sample ID: AB-13

## HPLC

Lot-Sample #....: D9J270265-004 Work Order #....: LNDVN3AC Matrix.....: SOLID  
 Date Sampled....: 10/26/09 13:43 Date Received...: 10/27/09  
 Prep Date.....: 12/23/09 Analysis Date...: 01/03/10  
 Prep Batch #....: 9357164 Analysis Time...: 00:29  
 Dilution Factor: 10  
 % Moisture.....: 69 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctanesulfonate	53 J	64	ug/kg	12
Perfluorooctanoic Acid	310	160	ug/kg	32
Perfluorobutanoic acid (PFBA)	110	64	ug/kg	11
Perfluoropentanoic acid (PFPa)	50 J	64	ug/kg	28
Perfluorohexanoic acid (PFHxA)	210	64	ug/kg	6.4
Perfluoroheptanoic acid (PFHpA)	46 J	64	ug/kg	23
Perfluorononanoic acid (PFNA)	82	64	ug/kg	16
Perfluorodecanoic acid (PFDA)	360	64	ug/kg	24
Perfluoroundecanoic acid (PFUnA)	360	160	ug/kg	58
A)				
Perfluorododecanoic acid (PFDoA)	100 J	160	ug/kg	26
A)				
Perfluorotridecanoic acid (PFTria)	87 J	160	ug/kg	37
Perfluorotetradecanoic acid (PFTeA)	ND	160	ug/kg	46
Perfluorobutane sulfonate (PFB)	710 S)	64	ug/kg	27
Perfluorohexane sulfonate (PFHxS)	ND	64	ug/kg	25
Perfluorooctane sulfonamide (FOSA)	ND	160	ug/kg	39

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	112	(50 - 200)
13C4 PFOA	137	(50 - 200)
13C4 PFOS	117	(50 - 200)
13C4 PFBA	120	(50 - 200)
13C2 PFHxA	123	(50 - 200)
18O2 PFHxS	123	(50 - 200)
13C5 PFNA	128	(50 - 200)
13C2 PFDA	121	(50 - 200)
13C2 PFUnA	112	(50 - 200)
13C2 PFDoA	78	(50 - 200)

**NOTE(S) :**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: AB-5

HPLC

Lot-Sample #....: D9J270265-005 Work Order #....: LNDVW1AA Matrix.....: SOLID  
Date Sampled...: 10/26/09 14:05 Date Received..: 10/27/09  
Prep Date.....: 11/04/09 Analysis Date...: 12/05/09  
Prep Batch #....: 9308329 Analysis Time...: 10:15  
Dilution Factor: 10  
\* Moisture.....: 55 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		MDL
		LIMIT	UNITS	
Perfluorooctanesulfonate	370	45	ug/kg	8.4
Perfluorooctanoic Acid	1400	110	ug/kg	23
SURROGATE	PERCENT	RECOVERY		
	RECOVERY	LIMITS		
13C4 PFOA	97	(50 - 200)		
13C4 PFOS	104	(50 - 200)		

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

## Dalton Utilities

Client Sample ID: AB-5

## HPLC

Lot-Sample #....: D9J270265-005    Work Order #....: LNDVW2AA    Matrix.....: SOLID  
 Date Sampled....: 10/26/09 14:05    Date Received...: 10/27/09  
 Prep Date.....: 11/04/09    Analysis Date...: 12/19/09  
 Prep Batch #....: 9308329    Analysis Time...: 21:10  
 Dilution Factor: 10  
 % Moisture.....: 55    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorobutanoic acid (PFBA)	69	45	ug/kg	7.6
Perfluoropentanoic acid (PFPA)	110	45	ug/kg	20
Perfluorohexanoic acid (PFHxA)	160	45	ug/kg	4.5
Perfluoroheptanoic acid (PFHpA) )	170	45	ug/kg	16
Perfluorononanoic acid (PFNA)	290	45	ug/kg	11
Perfluorodecanoic acid (PFDA)	1500	45	ug/kg	17
Perfluoroundecanoic acid (PFUnA) A)	840	110	ug/kg	40
Perfluorododecanoic acid (PFDoA) A)	290	110	ug/kg	18
Perfluorotridecanoic acid (PFTriA)	220	110	ug/kg	26
Perfluorotetradecanoic acid (PFTeA)	ND	110	ug/kg	32
Perfluorobutane sulfonate (PFBS) S)	510	45	ug/kg	19
Perfluorohexane sulfonate (PFHxS)	ND	45	ug/kg	17
Perfluorooctane sulfonamide (FOOSA)	500	110	ug/kg	28

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	85	(50 - 200)
13C4 PFOA	94	(50 - 200)
13C4 PFOS	97	(50 - 200)
13C4 PFBA	104	(50 - 200)
13C2 PFHxA	91	(50 - 200)
18O2 PFHxS	100	(50 - 200)
13C5 PFNA	104	(50 - 200)
13C2 PFDA	98	(50 - 200)
13C2 PFUnA	111	(50 - 200)
13C2 PFDoA	109	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

## Dalton Utilities

Client Sample ID: AB-5

## HPLC

Lot-Sample #....: D9J270265-005    Work Order #....: LNDVW3AA    Matrix.....: SOLID  
 Date Sampled....: 10/26/09 14:05    Date Received...: 10/27/09  
 Prep Date.....: 12/23/09    Analysis Date...: 01/03/10  
 Prep Batch #....: 9357164    Analysis Time...: 00:44  
 Dilution Factor: 10  
 % Moisture.....: 55    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctanesulfonate	260	45	ug/kg	8.4
Perfluorooctanoic Acid	1000	110	ug/kg	23
Perfluorobutanoic acid (PFBA)	56	45	ug/kg	7.6
Perfluoropentanoic acid (PFPA)	82	45	ug/kg	20
Perfluorohexanoic acid (PFHxA)	140	45	ug/kg	4.5
Perfluoroheptanoic acid (PFHpA)	150	45	ug/kg	16
)				
Perfluorononanoic acid (PFNA)	270	45	ug/kg	11
Perfluorodecanoic acid (PFDA)	1200	45	ug/kg	17
Perfluoroundecanoic acid (PFUnA)	630	110	ug/kg	40
A)				
Perfluorododecanoic acid (PFDoA)	200	110	ug/kg	18
A)				
Perfluorotridecanoic acid (PFTriA)	73	110	ug/kg	26
Perfluorotetradecanoic acid (PFTeA)	ND	110	ug/kg	32
Perfluorobutane sulfonate (PFBs)	550	45	ug/kg	19
Perfluorohexane sulfonate (PFHxS)	ND	45	ug/kg	17
Perfluorooctane sulfonamide (FOSA)	340	110	ug/kg	28

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
MeFOA	118	(50	- 200)
13C4 PFOA	130	(50	- 200)
13C4 PFOS	109	(50	- 200)
13C4 PFBA	118	(50	- 200)
13C2 PFHxA	122	(50	- 200)
18O2 PFHxS	117	(50	- 200)
13C5 PFNA	121	(50	- 200)
13C2 PFDA	116	(50	- 200)
13C2 PFUnA	103	(50	- 200)
13C2 PFDoA	69	(50	- 200)

**NOTE (S) :**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: AA-2

HPLC

Lot-Sample #....: D9J270265-006 Work Order #....: LNDV01AA Matrix.....: SOLID  
Date Sampled....: 10/26/09 14:21 Date Received...: 10/27/09  
Prep Date.....: 11/04/09 Analysis Date...: 12/05/09  
Prep Batch #....: 9308329 Analysis Time...: 13:54  
Dilution Factor: 20  
% Moisture.....: 58 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctanesulfonate	250	94	ug/kg	18
Perfluorooctanoic Acid	2700	240	ug/kg	48

SURROGATE	PERCENT RECOVERY	RECOVERY	
		LIMITS	
13C4 PFOA	118	(50 - 200)	
13C4 PFOS	115	(50 - 200)	

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

## Dalton Utilities

Client Sample ID: AA-2

## HPLC

Lot-Sample #....: D9J270265-006    Work Order #....: LNDV02AA    Matrix.....: SOLID  
 Date Sampled....: 10/26/09 14:21    Date Received...: 10/27/09  
 Prep Date.....: 11/04/09    Analysis Date...: 12/19/09  
 Prep Batch #....: 9308329    Analysis Time...: 21:26  
 Dilution Factor: 20  
 % Moisture.....: 58    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorobutanoic acid (PFBA)	200	94	ug/kg	16
Perfluoropentanoic acid (PFPA)	240	94	ug/kg	42
Perfluorohexanoic acid (PFHxA)	390	94	ug/kg	9.5
Perfluoroheptanoic acid (PFHpA)	390	94	ug/kg	34
)				
Perfluorononanoic acid (PFNA)	730	94	ug/kg	24
Perfluorodecanoic acid (PFDA)	2900	94	ug/kg	36
Perfluoroundecanoic acid (PFUnA)	1300	240	ug/kg	85
A)				
Perfluorododecanoic acid (PFDoA)	740	240	ug/kg	39
A)				
Perfluorotridecanoic acid (PFTriA)	420	240	ug/kg	54
Perfluorotetradecanoic acid (PFTeA)	ND	240	ug/kg	68
Perfluorobutane sulfonate (PFBS)	1500	94	ug/kg	39
Perfluorohexane sulfonate (PFHxS)	ND	94	ug/kg	36
Perfluorooctane sulfonamide (FOSA)	160	240	ug/kg	58

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
MeFOSA	102	(50 - 200)
13C4 PFOA	106	(50 - 200)
13C4 PFOS	113	(50 - 200)
13C4 PFBA	118	(50 - 200)
13C2 PFHxA	112	(50 - 200)
18O2 PFHxS	112	(50 - 200)
13C5 PFNA	111	(50 - 200)
13C2 PFDA	107	(50 - 200)
13C2 PFUnA	119	(50 - 200)
13C2 PFDoA	120	(50 - 200)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

## Dalton Utilities

Client Sample ID: AA-2

## HPLC

Lot-Sample #....: D9J270265-006    Work Order #....: LNDV03AA    Matrix.....: SOLID  
 Date Sampled....: 10/26/09 14:21    Date Received...: 10/27/09  
 Prep Date.....: 12/23/09    Analysis Date...: 01/03/10  
 Prep Batch #....: 9357164    Analysis Time...: 00:59  
 Dilution Factor: 10  
 % Moisture.....: 58    Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorooctanesulfonate	110	47	ug/kg	8.9
Perfluorooctanoic Acid	1400	120	ug/kg	24
Perfluorobutanoic acid (PFBA)	120	47	ug/kg	8.0
Perfluoropentanoic acid (PFPA)	150	47	ug/kg	21
Perfluorohexanoic acid (PFHxA)	230	47	ug/kg	4.7
Perfluoroheptanoic acid (PFHpA)	240	47	ug/kg	17
)				
Perfluorononanoic acid (PFNA)	360	47	ug/kg	12
Perfluorodecanoic acid (PFDA)	1500	47	ug/kg	18
Perfluoroundecanoic acid (PFUnA)	690	120	ug/kg	43
A)				
Perfluorododecanoic acid (PFDoA)	420	120	ug/kg	19
A)				
Perfluorotridecanoic acid (PFTria)	140	120	ug/kg	27
Perfluorotetradecanoic acid (PFTeA)	ND	120	ug/kg	34
Perfluorobutane sulfonate (PFS)	890	47	ug/kg	20
Perfluorohexane sulfonate (PFHxS)	ND	47	ug/kg	18
Perfluorooctane sulfonamide (FOSA)	85 J	120	ug/kg	29

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS	
		(50 - 200)	(50 - 200)
MeFOSA	119	(50 - 200)	(50 - 200)
13C4 PFOA	127	(50 - 200)	(50 - 200)
13C4 PFOS	120	(50 - 200)	(50 - 200)
13C4 PFBA	119	(50 - 200)	(50 - 200)
13C2 PFHxA	125	(50 - 200)	(50 - 200)
18O2 PFHxS	123	(50 - 200)	(50 - 200)
13C5 PFNA	128	(50 - 200)	(50 - 200)
13C2 PFDA	120	(50 - 200)	(50 - 200)
13C2 PFUnA	118	(50 - 200)	(50 - 200)
13C2 PFDoA	86	(50 - 200)	(50 - 200)

**NOTE(S) :**

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: AB-13

General Chemistry

Lot-Sample #....: D9J270265-001    Work Order #....: LNC71    Matrix.....: SOLID  
Date Sampled...: 10/26/09 13:43    Date Received...: 10/27/09  
% Moisture.....: 75

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-	PREP
Percent Moisture	75	0.10	%	ASTM D 2216-90	ANALYSIS DATE	BATCH #
					10/28/09	9301250

Dilution Factor: 1                          Analysis Time...: 13:45                          MDL.....: 0.0

Dalton Utilities

Client Sample ID: AB-5

General Chemistry

Lot-Sample #....: D9J270265-002 Work Order #....: LNC74 Matrix.....: SOLID  
Date Sampled...: 10/26/09 14:05 Date Received...: 10/27/09  
% Moisture.....: 52

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-	PREP
					ANALYSIS DATE	BATCH #
Percent Moisture	52	0.10	%	ASTM D 2216-90	10/28/09	9301250
		Dilution Factor:	1	Analysis Time...: 13:45	MDL.....	: 0.0

Dalton Utilities

Client Sample ID: AA-2

General Chemistry

Lot-Sample #....: D9J270265-003 Work Order #....: LNC75 Matrix.....: SOLID  
Date Sampled...: 10/26/09 14:21 Date Received..: 10/27/09  
% Moisture.....: 59

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-	PREP
			%		ANALYSIS DATE	BATCH #
Percent Moisture	59	0.10	%	ASTM D 2216-90	10/28/09	9301250
		Dilution Factor: 1		Analysis Time..: 13:45	MDL.....	: 0.0

Dalton Utilities

Client Sample ID: AB-13

General Chemistry

Lot-Sample #....: D9J270265-004 Work Order #....: LNDVN Matrix.....: SOLID  
Date Sampled...: 10/26/09 13:43 Date Received...: 10/27/09  
% Moisture.....: 69

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-	PREP
					ANALYSIS DATE	BATCH #
Percent Moisture	69	0.10	%	ASTM D 2216-90	10/28/09	9301250
		Dilution Factor: 1		Analysis Time...: 13:45		MDL.....: 0.0

Dalton Utilities

Client Sample ID: AB-5

General Chemistry

Lot-Sample #....: D9J270265-005    Work Order #....: LNDVW    Matrix.....: SOLID  
Date Sampled...: 10/26/09 14:05    Date Received..: 10/27/09  
% Moisture.....: 55

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-	PREP
					ANALYSIS DATE	BATCH #
Percent Moisture	55	0.10	%	ASTM D 2216-90	10/28/09	9301250
		Dilution Factor: 1		Analysis Time...: 13:45		MDL.....: 0.0

Dalton Utilities

Client Sample ID: AA-2

General Chemistry

Lot-Sample #....: D9J270265-006    Work Order #....: LNDV0    Matrix.....: SOLID  
Date Sampled...: 10/26/09 14:21    Date Received...: 10/27/09  
% Moisture.....: 58

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-	PREP
					ANALYSIS DATE	BATCH #
Percent Moisture	58	0.10	%	ASTM D 2216-90	10/28/09	9301250
		Dilution Factor: 1		Analysis Time..: 13:45	MDL.....	: 0.0